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**SYSTEM AND METHOD OF PAVEMENT ADVERTISING****BACKGROUND OF THE INVENTION**

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The present invention relates to improvements in methods of advertising and more particularly and more particularly relates to a system and method for advertising on pavement surfaces such as but not limited to road surfaces. More particularly the present invention relates to a means of advertising wherein  
10 indicia and or images are placed in a surface which takes pedestrian and /or vehicular traffic.

The present invention is particularly useful in an application where advertising indicia may be buried between layers of a pavement, or underneath an upper pavement layer. The invention further provides a system of pavement  
15 advertising in which advertising indicia may be automatically applied to a pavement surface by a plotter which defines an image outline responsive to actuation by a controller.

**PRIOR ART**

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There are in existence a wide variety of different forms of static advertising and more particularly surfaces on which advertising is applied. Examples include road and rail side hoardings which are intended for viewing by passers by and commuters. One of the inherent problems associated with viewing advertising  
25 particularly on road side hoardings is driver distraction. Viewing the advertising requires a driver to momentarily take his or her eyes off the road. This is potentially dangerous but tolerated by authorities.

Advertising is all pervasive so there has been virtually unlimited potential for advertising to appear on almost any surface, including building facades and  
30 other structures. The advertising industry uses a wide variety of techniques for product promotion in static advertising, but to date there has been no

satisfactory technique for the application of advertising to pavement surfaces such as pedestrian walkways and roads.

Advertisers have in the past employed step advertising in which advertisements are affixed to a riser of a step or escalator. These may be multiple advertisements which are the same or segments of the one advertisement which together make up the complete advertisement.

The commercial attachment of advertising media to vehicles has also been known for a long time. Advertising sheets are frequently attached, for example, to large surfaces of public transportation vehicles such as buses, street cars, commuter trains, subways, or taxis. The businesses which are advertised on these sheets pay a certain fee for this to the operators of the public transportation vehicles or taxi companies.

In order to assure that the advertising medium is properly attached to a support structure an employee of the advertising company or a business authorized to do so performs visual inspections of the hoarding from time to time. This monitoring process incurs considerable costs due to the high cost of personnel and is undesirable.

In another example of the prior art, United States Patent 4,907,361 to Villard discloses a luminous panel for advertising on the ground. Disclosed in an illuminated display device for installation in the ground or surface of a pavement and which incorporates a concrete base which houses a light source and which further supports a first fixed frame to which is mounted a thick transparent plate which plate is reinforced by transparent support members which extend upwardly from the bottom of the concrete base and which further includes an articulated thinner transparent plate which is mounted to a moveable frame which is secured over the fixed transparent plate in such a manner that advertising displays may be placed intermediate the two plates with the plates being selectively locked to retain the advertising displays therebetween.

Luminous panels have already been proposed which are intended to be sealed in the ground at the level of the pavements of public highways or the roads of pedestrian precincts, to provide lighting and evidencing of advertising posters or other similar printed documents. However, these attempts have not been successful due to the low resistance of the apparatuses to the load to which they are subjected from vehicles which serve the pedestrian precincts.

An attempt was made to overcome this defect by producing a luminous advertising box which, by its structural integrity, is capable of resisting, without failure the highest rolling loads. The advertising box comprised a base of reinforced concrete or fiber concrete, intended to be sealed in an excavation made in the ground and which are equipped with a light source formed by a series of electrical tubes oriented parallel to one another. This base presents, slightly below its open upper edge, a peripheral shoulder or step against which abuts a metal frame forming support for a fixed transparent plate of considerable thickness, made for example of methacrylate or other similar transparent resin; this plate also abuts against a series of parallel distance pieces which rest against the bottom of the base and which are themselves made of a transparent synthetic material. This equipment is cumbersome, expensive to manufacture and complicated to construct and accordingly was not a practical proposition. That invention related to an improved roadway sign which is visible at night at great distances to occupants of approaching vehicles, i.e., has high conspicuity, and which is also easily read upon approach, i.e., has high legibility.

Roadway signs, such as highway signs, markers, advertising displays, etc., have long been constructed using retroreflective sheetings. Retroreflective sheeting reflects incident light rays substantially back toward the source as a cone of light. Thus the light emitted by headlights of a motor vehicle toward a sign constructed with such sheeting will be reflected back toward the vehicle so as to be visible to the occupants of same.

5 Retroreflective sheetings were typically first employed in roadway signs in the background portions of the sign, with the sheeting being cut out around raised indicia, or being selectively covered, e.g., painted, to produce same. Thus an occupant of an approaching vehicle would first detect the sign's background, and upon close approach, the indicia would become legible due to the contrast of brightness and color between the indicia and background. Such a sign is disclosed in U.S. Pat. No. 2,326,634 (Gebhard et al.) which relates to the retro reflective brilliancy of micro sphere-based sheeting and the relationship of the refractive index of the micro spheres thereto.

10 Roadway signs can also be constructed from cube-corner retro reflective sheetings such as disclosed in U.S. Pat. No. 3,712,706 (Stamm) which discloses such sheetings and methods for preparing the same.

15 White or silver sheeting may be used as the indicia and green coloured sheeting as the background, such as is commonly seen along the interstate highways. These are not advertising signs as such but they do convey images and word information. These signs are closer to the roadside hoarding structures which are used to display advertising.

### INVENTION

20 New ways of providing advertising are constantly being sought by advertisers and advertising agencies. To date, despite the great variety of known forms of advertising, to the best of the knowledge of the applicant, there has been no examples of practical and effective pavement advertising.

25 Pavement advertising requires application of some form of images and /or indicia to a horizontal surface. In the case where a surface is under constant abrasion this must be taken into account in the application of the indicia.

There is a long felt want in the industry to provide advertising in a way which provides the advertiser with an edge over competitors. There is also a

5 need to provide advertising in a way which lessens the distraction to a driver and which allows a driver to absorb the advertising indicia more so than road side advertising due to the distractions posed by the latter. It is a further object of the invention to provide a form of advertising which is placed in the line of sight of a driver of a vehicle.

10 The present invention has been developed to overcome the foregoing limitations and disadvantages of known forms of advertising and to provide a useful alternative to the known forms of static advertising.

15 The present invention seeks to eliminate the above described prior art problems by providing an alternative form of advertising in which drivers and pedestrians may view advertising on a pavement as they drive and walk respectively. It is an objective of the present invention to eliminate the shortcomings of the prior art by introducing advertising on surfaces for which there have previously been no practical means of advertising.

20 The advantages of this invention are achieved by providing a system and method for application of advertising to a road surface in a convenient and economically efficient manner. According to one embodiment, this may be achieved by spraying a suitable durable paint on a road surface according to a prescribed delivery regime. The paint forming advertising indicia may be applied direct to the road or to a substrate which itself is also applied to the road surface by such means as a suitable glue or fixing means.

25 Such materials will be referred to herein as sheetings or substrates. The sheeting employed in the background area is selected to have maximum durability.

The advertising indicia is disposed so that it may be read at small observation angles and efficiency at long observation distances where the advertising may be read, detected and recognized.

In brief summary then, the invention provided herein is a sign, such as a highway sign or marker, comprising an image created by a plotter responsive to a controller, the image or indicia having a legibility zone dictated by the size or orientation of the sign. Accordingly, as an automobile approaches an image advertising it will be viewable from the vehicle by a driver travelling at speed. Therefore the length of the sign along an axis parallel to a longitudinal axis of a road will determine legibility and appropriate viewing angle as a driver approaches the advertising indicia.

As the vehicle continues its approach and enters a legibility zone, the length of the image or indicia will enable a driver enough time to view the advertising. Thus, this invention provides means for advertising with high conspicuity on a road or pavement surface and so that the sign has high durability, thereby improving the overall performance of a roadway sign in a manner heretofore unavailable.

According to the invention, this is accomplished by means of the characteristic features which will be specified below. The structural design of the pavement may according to one embodiment, be adjusted to accommodate the advertising indicia and images.

In one broad form the present invention comprises: a pavement surface capable of carrying pedestrian or vehicular traffic characterised in that the pavement includes therein or thereon advertising images and/or indicia which is viewable from above or at an acute angle to a plane of said advertising. Preferably, the advertising images or indicia are located below an upper surface so as to prevent wear of the advertising.

In another broad form the present invention comprises:

a pavement surface capable of carrying pedestrian or vehicular traffic; characterised in that the pavement includes therein advertising images and/or indicia which is viewable from above or at an acute angle to a plane of said advertising and wherein the advertising is disposed below an upper surface of said pavement so that the advertising is protected from wear due to vehicular or pedestrian traffic.

In another broad form the present invention comprises: a roadway pavement having disposed beneath an upper surface, advertising images and/or indicia which is viewable from above or at an acute angle to a plane of said advertising by a driver on the roadway pavement.

In its broadest form the present invention comprises; advertising applied to a roadway pavement either on an upper surface or below said upper surface.

In a broad form of a method aspect the present invention comprises:  
a method of applying advertising to a roadway or pedestrian pavement comprising the steps of :  
a) preparing a pavement surface capable of carrying pedestrian or vehicular traffic;  
b) providing an advertising image on an upper surface of said pavement or underneath the upper surface so that the advertising is protected from wear due to vehicular and /or pedestrian traffic  
c) placing the image or indicia so that said image is viewable from above or at an acute angle to a plane of the advertising and wherein the advertising is disposed below an upper surface of said pavement.

In another broad form the present invention comprises:  
a road advertising system in which advertising indicia is applied to an upper surface of a road forming a carriageway capable of carrying pedestrian and/or vehicular traffic;  
the system comprising;

a wheel mounted mobile unit including a source of marking fluid,  
delivery means to distribute said fluid onto a surface,  
control means to regulate delivery rate of said fluid,  
the control means including a computer actuated plotter which controls the path  
of at least one delivery nozzle associated with the delivery means to form an  
image on the road surface. Preferably, the mobile unit is a vehicle including a  
control centre capable of actuating said control means.

The system further comprises a plotter which defines a path which is  
determined by parameters programmed into said computer, wherein the path  
defined by said plotter is an outline of an advertising image to be applied to said  
road surface. A plurality of nozzles each deliver a fluid of at least one type  
wherein each delivers a fluid of at least one colour. Preferably the vehicle  
includes a control panel to select a computer generated advertising indicia and  
activate said plotter to generate said image. Preferably, the images are stored  
on a data base in said computer and the control means includes a controller  
which regulates the rate of discharge of fluid from said nozzles. The fluid is  
sprayed from each said nozzles to a road surface or onto an upper surface of a  
substrate, which is preferably fixed to a road surface by an adhesive. Preferably  
the fluid is paint.

A heating unit may be employed which rapidly cures said paint when applied to  
the surface.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

The present invention will now be described in more detail according to a  
preferred embodiment and with reference to the accompanying illustrations  
wherein;

Fig. 1 is a perspective view of a road pavement including pavement  
advertising according to one embodiment.



Fig. 2 shows a long section profile of a pavement including a recess for receiving an insert which carries advertising.

Figure 3 shows a long section profile of a pavement including advertising disposed on an upper pavement surface.

5 Figure 4 shows a perspective view of an alternative embodiment in which advertising is applied to a road surface via a substrate.

Figure 5 shows a perspective view of an advertising system according to a preferred embodiment of the invention.

#### 10 BEST MODE OF CARRYING OUT THE INVENTION

Referring to figure 1 there is shown a perspective view of a pavement 1 having a regions 2, 3 and 4 which includes advertising indicia. The pavement surface is preferably a road or pedestrian walkway but it will be appreciated that the  
15 advertising method of the invention can be applied to a variety of pavement surfaces.

Pavement 1 may be constructed from a variety of surface materials such as bitumen concrete hot mix, cold mix. The advertising is applied either during  
20 construction of a pavement or at the completion of an upper surface of the pavement in which case the advertising image or indicia is applied direct to the upper surface.

Typically, in the construction of a road pavement surface the first step is  
25 excavation to a predetermined depth to ensure that a subgrade is adequately prepared for the ultimate dead and live loading to be applied to the upper finished surface of the pavement. The type of road pavement finish determines construction from that point on. In the case of a concrete road pavement after a suitable road base is applied, concrete is laid in sections in the usual manner.  
30 The advertising concept according to the present invention may be allied during or after construction. In the case of advertising applied during construction, the manner of application is determined by the nature and material of the road

pavement surface. In the case of a concrete road, advertising indicia or images may be introduced on a surface provided by an insert which is durable enough to accommodate traffic but at the same time allow display of advertising. It is not new to apply to road surfaces indicia such as signage to instruct road users as to warnings and provide directions. Such indicia is applied using heavy duty paints applied to an upper surface of the road pavement. This is used in such applications as pedestrian crossings and lane indication. Another form of road marking is the use of strips of a heavy duty cover material which are glued onto road surfaces. Another form of road marking is the use of glass beads which are set as reflective surfaces. In none of the known methods of pavement marking has there been the employment of advertising in or on a road surface in an efficient, economic and practical manner.

Since advertising images and indicia are frequently changed, the invention provides a means to accommodate such change of advertising on a pavement surface by use of a durable insert or durable or non durable paint applied to an upper surface of the pavement.

Fig. 1 shows is a perspective view of a road pavement including pavement advertising according to one embodiment.

As shown in figure 1 an advertisement is placed on region 2, 3 and 4 of pavement surface 1. Fig. 2 shows a long section profile of a pavement including a recess for receiving an insert which carries advertising.

As shown with reference to figure 2 this may be achieved by use of a durable insert 6 which is placed in a recess 7 formed in pavement surface 5. Advertising may be replaced by removing insert 6. Insert 6 has an upper surface 8 which receives and retains advertising indicia. This may be applied by painting, engraving or the like applied direct to the upper surface 8 of insert 6. This may be carried out onsite or in a factory whereupon the completed advertisement is delivered to the site of the advertising. In another embodiment, advertising

may be applied to a road pavement surface by direct application to a finished upper road surface.

5 As shown in figure 3 an advertisement may be placed on region 10 of pavement surface 9. This may be achieved by use of a durable material 11 placed directly onto pavement surface 9. Advertising may be replaced by removing material 11 which has an upper surface 12 which receives and retains advertising indicia. This may be applied by painting, engraving or the like applied direct to the upper surface 9. This may be carried out onsite or in a  
10 factory whereupon the completed advertisement is delivered to the site of the advertising. In another embodiment, advertising may be applied to a road pavement surface by direct application to a finished upper road surface.

The insert 6 used for the advertising described with reference to figure 2 is  
15 preferably a high strength material such as steel or a heavy duty plastics material. A high strength plastics material may also be used with a highly durable upper surface.

In an alternative embodiment advertising indicia such as trade marks may be applied direct to the pavement surface or blended into the upper surface  
20 pavement material.

Pavement advertising requires application of some form of images and /or indicia to a horizontal surface. In the case where a surface is under constant abrasion this must be taken into account in the application of the indicia.

25 There is a long felt want in the industry to provide advertising in a way which provides the advertiser with an edge over competitors. There is also a need to provide advertising in a way which lessens the distraction to a driver and which allows a driver to absorb the advertising indicia more so than road side advertising due to the distractions posed by the latter. It is a further object  
30 of the invention to provide a form of advertising which is placed in the line of sight of a driver of a vehicle.

The present invention has been developed to overcome the foregoing limitations and disadvantages of known forms of advertising and to provide a useful alternative to the known forms of static advertising.

5 The present invention seeks to eliminate the above described prior art problems by providing an alternative form of advertising in which drivers and pedestrians may view advertising on a pavement as they drive and walk respectively. It is an objective of the present invention to eliminate the shortcomings of the prior art by introducing advertising on surfaces for which there have previously been  
10 no practical means of advertising.

According to the invention, this is accomplished by means of the characteristic features which is specified herein with reference to various embodiments. The structural design of the pavement for advertising is adjusted to accommodate  
15 the advertising indicia and images.

Figure 4 shows a perspective view of an alternative embodiment in which advertising is applied to a road surface via a substrate 18 which is fitted to road surface 19 by means of glue or the like.  
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Figure 5 shows a perspective view of an advertising system according to a preferred embodiment of the invention. The system includes a vehicle 20 which travels along surface 21 of road pavement 22. Paint and control equipment are held inside vehicle 20. In the cabin of vehicle 20 is a control panel 23 to select  
25 a specific computer generated sign or logo and initiate paint application.

Alternative electric transmission may be activated during paint application. Paint application plotter jets 24 or nozzles and associated scanning machinery is disposed on boom 25. Ultraviolet light or heating unit 26 may be employed to rapid cure paint & apply a non slip coating. A safety sign indicated  
30 by arrow 27 may be employed.

The road advertising system in which advertising indicia is applied to an upper surface of a road forming a carriageway comprises. The wheel mounted mobile vehicle unit 20 includes a source of marking fluid and delivery means to distribute said fluid onto surface 21 by activation of control means to regulate delivery rate of the fluid. The control means includes a computer actuated plotter which controls the path of at least one delivery nozzle/ jest 24 associated with the delivery means to form an image on the road surface.

The plotter defines a path which is determined by parameters programmed into said computer and which is an outline of an advertising image to be applied to said road surface.

A plurality of nozzles 24 each deliver a fluid of at least one type. Each may deliver a fluid of at least one colour.

The surface on which the advertising indicia is placed may be an upper surface of a substrate 19 as shown in figure 4. The substrate 19 may be fixed to a road surface by an adhesive.

The foregoing describes only some embodiments of the present invention, and it will be recognized by persons skilled in the art that numerous variations and modifications may be made to the invention broadly described herein without departing from the overall spirit and scope of the invention.